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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,787	07/19/2004	Yasuhiro Miyamoto	Q82601	6376

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EXAMINER
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MULLINS, BURTON S

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/501,787

Applicant(s)

MIYAMOTO ET AL.

Examiner

Burton S. Mullins

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 19 July 2004 has been considered by the examiner.

### ***Drawings***

3. Figures 4-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

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4. The disclosure is objected to because of the following informalities: Reference to specific claims (pp.6-8) should be deleted since the claim numbered can change during prosecution. In the Description of Drawings, Figs.3A and 3B are not individually described. In the description pp.10-13, the description of “armature blocks...spaced apart from each other at intervals corresponding to electrical angles which are integral multiples determined by dividing the magnetic pole pitch  $\tau_p$  by the number of sub-divisions of the armature blocks” is not idiomatic and makes no sense. Since the armature blocks 10/11/12 in Fig.1 are connected, how can they be “spaced apart”? Further, the intervals of spacing are designated as  $2/3\tau_p$ ; however, this does not appear to be the result of “dividing the magnetic pole pitch  $\tau_p$  by the number of sub-divisions of the armature blocks.” It is not clear what a “sub-division of the armature blocks” is. Presumably, this refers to the three phase cores on each block, in which case the equation for interval spacing would be  $1/3\tau_p$ . Appropriate correction is required.

#### ***Claim Objections***

5. Claim 6 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from a multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim 6 has not been further treated on the merits.

#### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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7. Claims 2-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “the armature blocks are separated from each other at intervals corresponding to an electrical angle of an integral multiple determined by dividing the magnetic pole pitch [ $\tau_p$ ] by the number of sub-divisions of the armature blocks” is indefinite and not idiomatic. As explained above in the objection to the specification, since the armature blocks are connected, how can they also be considered “spaced apart”? Further, since the “sub-division of the armature blocks” lacks antecedent basis and has not been defined, the claimed formula for determining the spacing is impossible to solve.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawada (JP 2001-275336). Kawada teaches an armature of a linear motor comprising: a modular-type armature 4 which is divided into a plurality of armature blocks 10/20/30 (Figs.1&2) and around which an armature winding 57/58/59 is coiled (Figs.1-2&5), a plurality of the armature blocks 10/20/30 being formed by sequentially coupling a plurality block cores (4A/4B; Fig.3), and connectors 50 to be used for electrically connecting lead wires (not numbered, see Fig.5) of armature windings 57/58/59 coiled around the armature blocks provided on both ends of a

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plurality of the armature blocks (Fig.5) so that connections of the respective armature blocks and connections of the armature windings 57/58/59 become serial or parallel (Fig.5), wherein the connectors provided between the armature blocks are connected in a form of in-phase connections, e.g. coils 54/57, 55/58 and 56/59 are connected in phase, respectively (Fig.5).

Regarding claim 5, note an armature mount plate 11 (Fig.3) which is arranged in the direction of thrust of the linear motor, i.e. along the longitudinal axis, and provides a retaining function (for the coils) provided on each of the armature blocks, and an engagement projection 7 provided at one end of each armature mount plate 11 (Fig.3), wherein an engagement groove 17 (or 27) is formed in the other end of the same to couple together the armature blocks (Figs.2&3).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2-4, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawada (JP 2001-275336) in view of Saito et al. (JP 03-135357). Kawada teaches that there are three coils on each block 20 (Figs.1-2) and further that each block is separated (by a gap corresponding to the air gap between the individual poles in Fig.3). Kawada further teaches permanent magnets (not shown) which inherently possess a magnetic pole pitch.

Kawada does not give a relation between block separation as “intervals corresponding to an electrical angle of an integral multiple determined by dividing the magnetic pole pitch by the number of sub-divisions of the armature blocks” [sic].

Saito teaches a permanent magnet linear motor including three armature blocks 2 (Fig.4) connected together, with permanent magnets having a pole pitch  $L$ . The blocks are spaced from each other such that their brush/core centers are separated from each other by  $L/3$ . This arrangement enables thrust to be obtained from force generated by conduction of two phases (abstract).

It would have been obvious to modify Kawada and provide separation between the blocks based on the pole pitch per Saito since this would have allowed for thrust to be obtained from force generated by conduction of two phases.

Regarding claims 3-4, where the general features of a claim, i.e., block separation, are disclosed in the prior art, changes in size or range thereof have been held to involve ordinary engineering design. In re Reven, 156 USPQ 679 (CCPA 1968).

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029.

The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be

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reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Burton S. Mullins  
Primary Examiner  
Art Unit 2834

bsm  
20 July 2006